

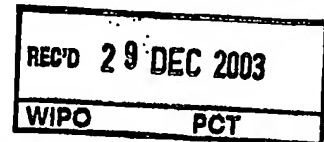


121/US03003/00463
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1. Your reference	42231		
2. Patent application number (The Patent Office will fill in this part)	0224874.8		25 OCT 2002
3. Full name, address and postcode of the or of each applicant (underline all surnames)	Laurence LASSALLE, 116A Boundary Road, London, NW8 0RH.		
Patents ADP number (if you know it) If the applicant is a corporate body, give the country/state of its incorporation	8493314001		
4. Title of the invention	Visual Indicating Device		
5. Name of your agent (if you have one)	J.B. King,		
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)	KINGS PATENT AGENCY LIMITED		
Patents ADP number (if you know it)	73 Farringdon Road, London, EC1M 3JQ, United Kingdom 1008001		
6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / year)
7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing (day / month / year)	
8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if: a) any applicant named in part 3 is not an inventor, or b) there is an inventor who is not named as an applicant, or c) any named applicant is a corporate body. See note (d))	No		

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 5
Claim(s) -
Abstract -
Drawing(s) 4 sheets - 9 Figs.

10. If you are also filing any of the following, state how many against each item.

Priority documents -

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 25/10/02

J.B. King (Agent)

12. Name and daytime telephone number of person to contact in the United Kingdom

Voice: 020 7248 6161

Fax: 020 7831 0926

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Title:**Visual indicating device.**

This invention relates to a visual indicating device and more particularly to an analogue device for showing the time or elapse of time. It is to be understood that the device of this invention may be used generally to indicate various parameters such as are shown on dial or gauge indicating devices.

In accordance with this invention there is provided a visual indicating device comprising two or more superposed and interleaved visually contrasting discs lying in mutually parallel helical planes, the discs being each rotatable about a common axis by drive means adapted to selectively rotate one or other of the discs, whereby the discs, when viewed face on, together display a visually contrasting segment having an area or position representative of the relative positions of rotation of the discs and representing a value of a parameter to be displayed by the device.

Each disc may be mounted to extend laterally from the surface of a respective cylinder. One cylinder being mounted coaxially and telescopically within the other with the outer cylinder having a helical slot in the wall thereof and through which the disc of the inner cylinder may extend. Rotation of one cylinder relative to the other producing relative longitudinal movement of the cylinders through the disc riding in the slot and causing one disc which is overlying the other disc to mask the other disc by an extent dependent on the relative positions of rotation.

The base of each cylinder may include a drive, such as an integral cog

with an associated drive means. The inner cylinder being fixed vertically in position and driven for one half a revolution of the drive means, the outer cylinder being driven for the other one half revolution of the drive means. By this means the outer cylinder, being held against rotation, moves down
5 telescopically over the inner cylinder during rotation of the latter after which, in a terminal position, the outer cylinder is rotated to move up over the inner cylinder which is held against rotation..

This invention is more particularly described with reference to the drawings showing, in a diagrammatic way, one embodiment of a time indicating
10 device in accordance with this invention. In the drawings:

Fig. 1 shows the device in side elevation,

Fig. 2 shows the device of Fig. 1 in an alternative position,

Fig. 3 A shows the individual barrel components assembled and in side elevation,

15 Figs. 3 B to D show the individual barrel components separated in side elevation,

Figs. 4 A to D show in plan view the barrels and discs attached to the barrels corresponding in views to Fig. 3,

Figs. 5 A to D shows the drive cogs for each barrel in plan view
20 corresponding in views to Fig. 3,

Figs. 6 A to D shows the drive cogs of Fig. 5 in side elevation,

Figs. 7 A to H shows plan views of the discs and the indications presented for various times of the day,

Figs. 8 A to D show in plan view a more complex arrangement with three disc and cylinder assemblies to show hours, minutes and seconds, and

Figs. 9 A to D show the arrangement of Figs. 8 in side elevation

Referring to Figs 1 to 6 of the drawings the device has three concentric cylinders B01, B02 and B03 forming barrel system B00. Outer cylinder B01 is free to slide up and down the inner cylinder B02 which, in turn, is mounted over the central base cylinder B03. The cylinders are all freely and relatively rotatable. The base cylinder B03 forms a support for the device and may include a mounting means.

Outer cylinder B01 has a base mounted cog B01.1 and inner cylinder B02 has a base mounted cog B02.1 forming the barrel and barrel cog system B00. The cylinder B01 is provided with a helical slot D through the wall, and here shown with two complete turns around the circumference, and a helical disc A01 (forming part of disc system A00) extending one turn around the circumference medially within the confines of the circumference defined by the slot and fixed in position to the outer surface of the cylinder.

The inner cylinder B02 also has a single turn disc A02 (forming the other part of disc system A00) arranged so that the disc may extend through the slot D. In this arrangement rotating cylinder B01 clockwise (as seen from above) from the position shown in Fig. 1 results in the terminal position shown in Fig. 2

after one full revolution, and *vice versa*. This action occurs as inner cylinder B02 is stationary and the slot D thus rides down along the disc A02.

If, conversely, and from the position of Fig. 2 cog B02.1 rotates inner cylinder clockwise then disc A02 is caused to travel down the slot D and the
5 cylinders thus return to the position of Fig. 1.

The cogs B01.1 and B02.1 are each driven through cogs C01 and C02 respectively by a drive C03 forming cog system C00 and turning one revolution for each twenty four hour period. The cogs C01 and C02 are twice the diameter of the barrel cogs B01.1 and B02.1 and have engagement teeth
10 around only one half of the circumference and phased by 180°. Thus when the teeth of C01 disengage from B01.1 after twelve hours (position of Fig. 2) the teeth on C02 then engage B02.1 and outer cylinder B01 stops rotating and inner cylinder B02 starts rotating back to the Fig. 1 position after an elapse of a further twelve hours. Figs 3 to 6 shown the components in more detail and Fig.
15 5B and C shows the configuration of the teeth on cogs C01 and C02 more clearly with Fig 5A showing the superimposed teeth.

The discs A01 and A02 have contrasting colours and when viewed from above the visual aspect is of different colour segments according to the relative rotational positions from which there is an indication of time. Fig.7 A to H
20 shows eight different visual presentations for three hourly times from 12:00 p.m. through 12:00 a.m. to 9:00 p.m. This involves on revolution of C03 for each twenty four hour period. In an alternative arrangement the discs may have different textures, be of different materials or of different shades or patterns.

Figs 8 and 9 are views of a more comprehensive indicating system showing three disc systems A01 and A02, A03 and A04, A05 and A06 for hours, minutes and seconds respectively. The hours discs A01 and A02 move and provide an indication as previously described. The minutes discs A03 and A04 and associated cylinders are located coaxially around the hours discs and the associated mechanism drives the discs in a similar manner but with the appropriate relative difference in timing. In a similar way the seconds discs A05 and A06 are located with the cylinders coaxially around the minutes and hours cylinders and driven to provide the correct time relationship.

- 10 In the embodiment described in Figs 8 and 9 the seconds indication, being the outer most visible ring, comprises a progressive change from yellow to red (lighter shading to darker shading) as shown and as the seconds advance clockwise up to the end of the minute followed by a change from red to yellow progressively (darker shading to lighter shading) in the next minute.
- 15 This sequence then repeats.

For the minute indication a similar sequence occurs for the middle ring but from lighter green to darker green (darker shading to lighter shading) as shown during the first hour and from darker green to lighter green (lighter shading to darker shading) for the next hour.

- 20 Appropriate drive means and gearing will be as disclosed in Figs 1 and 2 but with the required changes.

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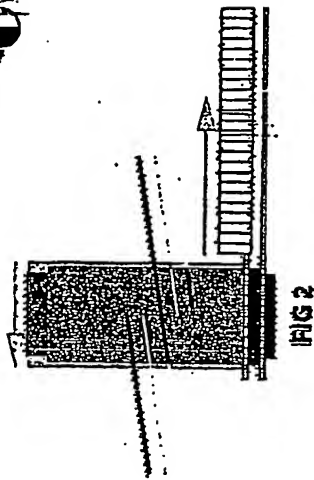


FIG 2

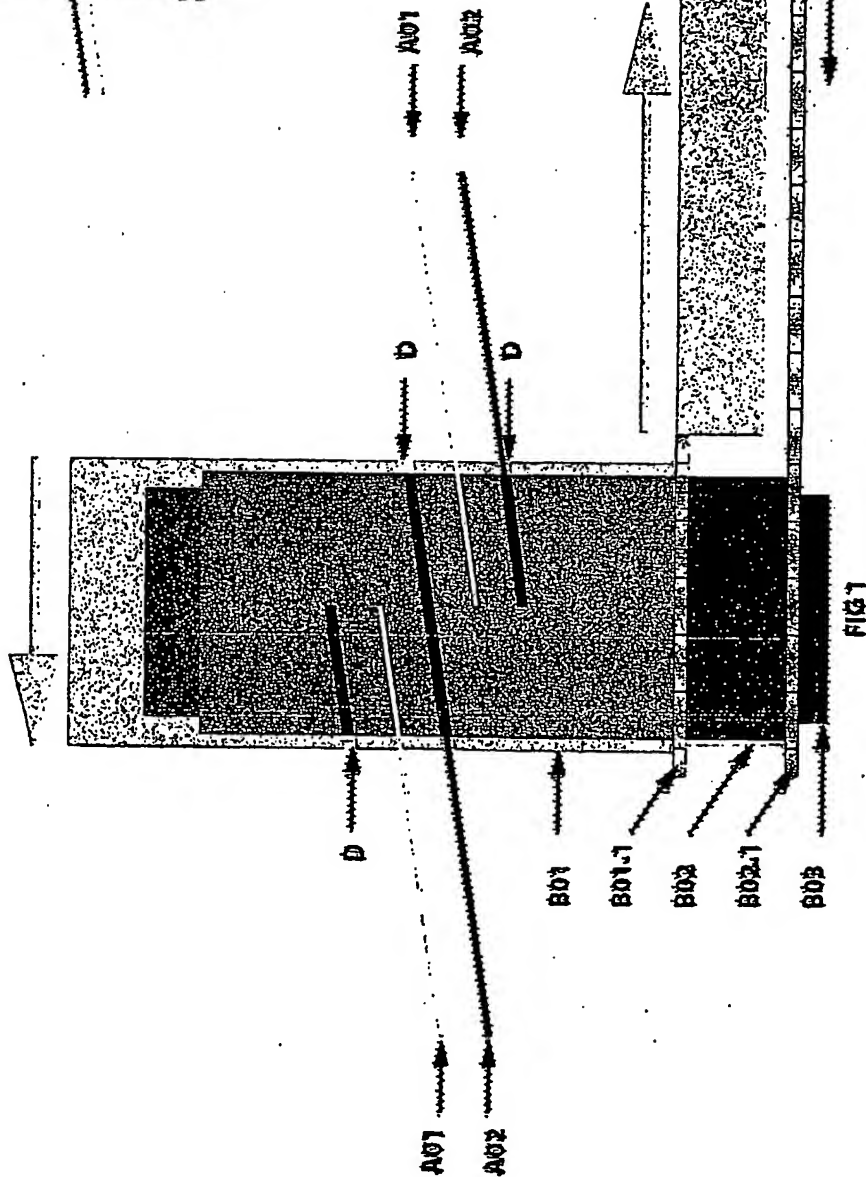
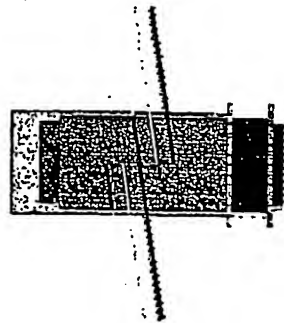


FIG 1

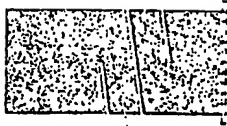
A01 is attached to B01. A02 is attached to B02. B01 and B02 revolve around B03. Cog C01 is connected to C03. Cog C02 is connected to C03.

As C03 turns with clockwise C01 for example picks up the cog B01.1 on barrel B01 [FIG 1]. As it rotates it turns A01 down through A02 via D.

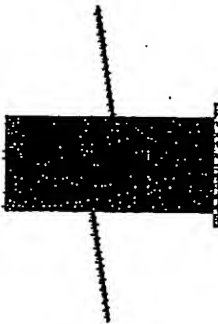
C03 turns C01 for 24 hours when after 12 hours the teeth end and the teeth on C02 pick up B02 via the teeth B02.1 [FIG 2] and turns A02 down under A01 through D, in turn forcing A01 B01.1 to rise back to the top [FIG 1].



A. Disc system / Barrel system B00/D



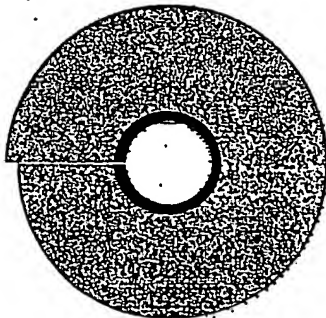
B. Disc 01 / Outer Barrel B01/D



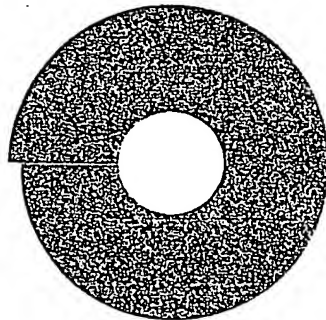
C. Disc 02 / Inner Barrel B02



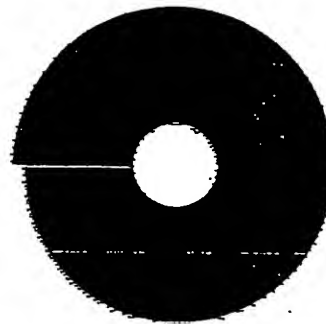
D. Central Barrel B03



A. Disc system A00



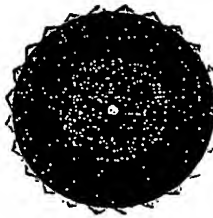
B. Disc A01



C. Disc A02



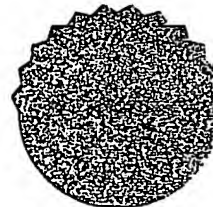
D. Central Barrel A03



A. cog system C00

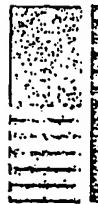


B. Top cog C01

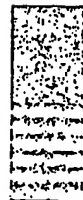


C. Bottom cog 02

D. Cog divider / spindle C03



A. cog system C00



B. Top cog C01



C. Bottom cog 02

D. Cog divider / spindle C03

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FIG 3

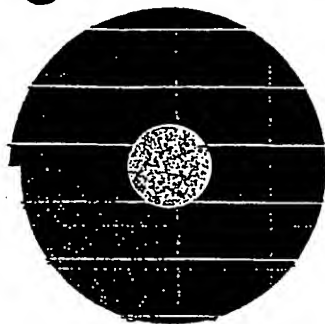
FIG 4

FIG 5

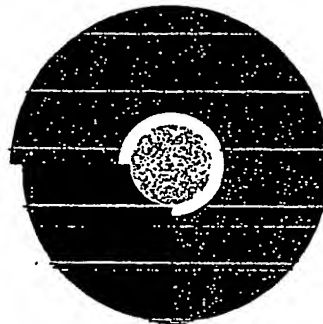
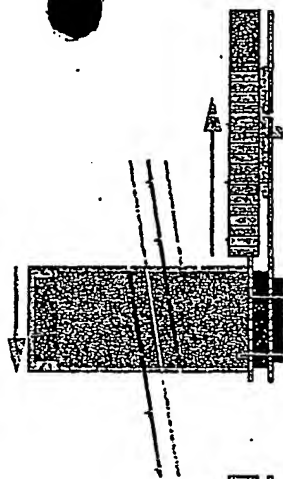
FIG 6

2/4

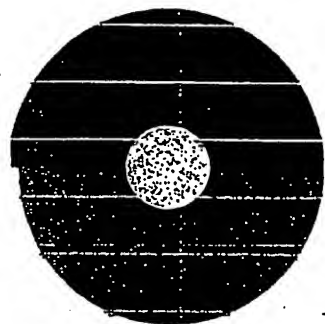
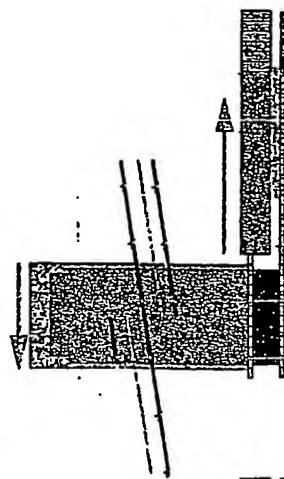
FIG 7



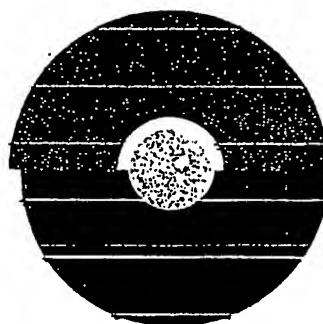
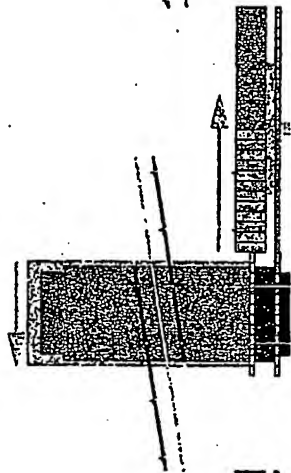
D.



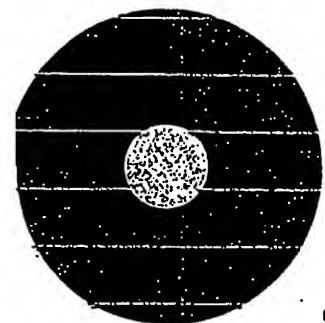
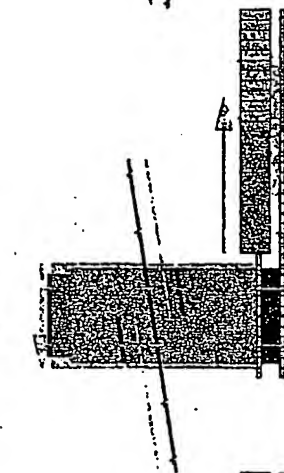
H.



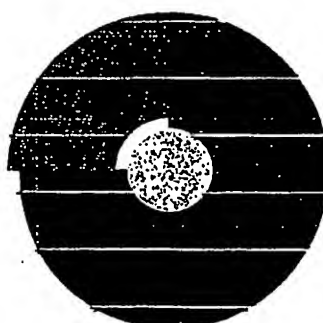
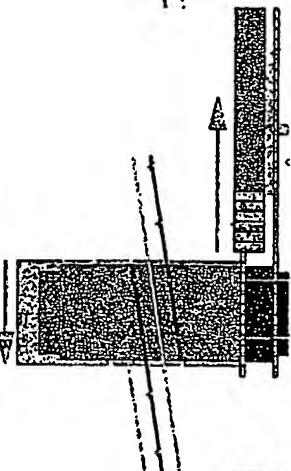
C.



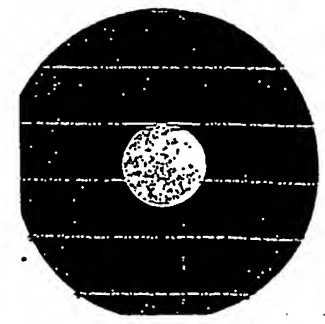
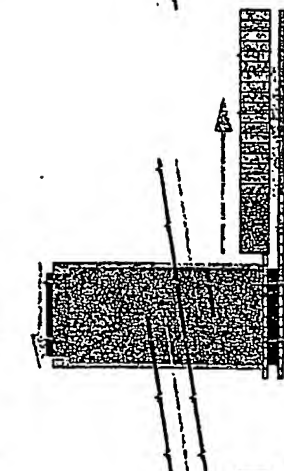
G.



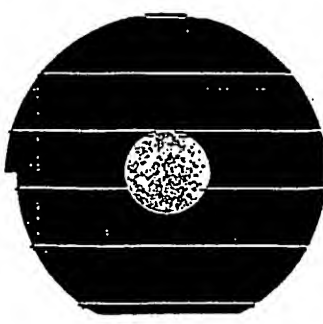
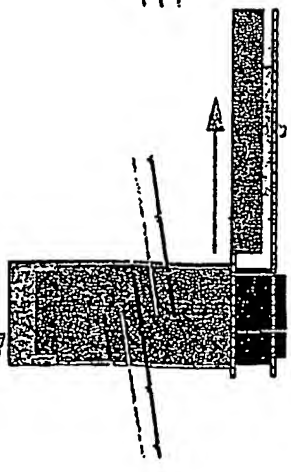
B.



F.



A.



E.

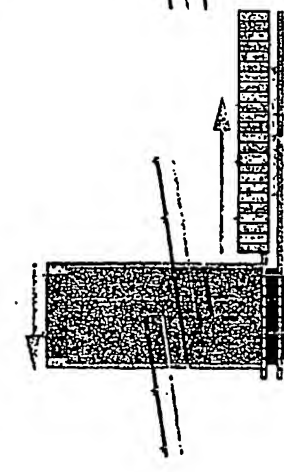


FIG 8

TOP VIEW

12.00.00 AM

Seconds Disc A05, Hours Disc A03, Minutes Disc A01.

12.15.30 AM

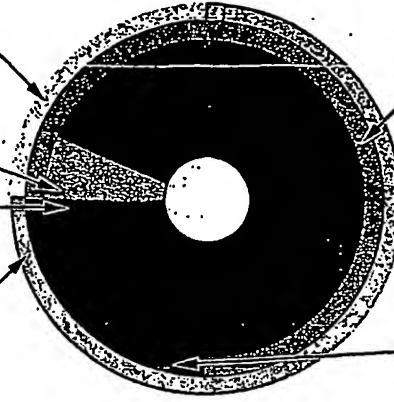
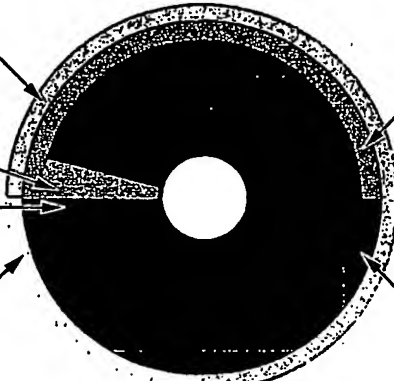
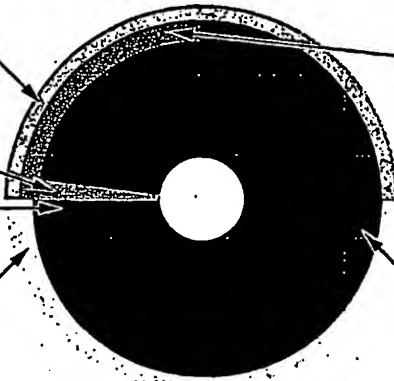
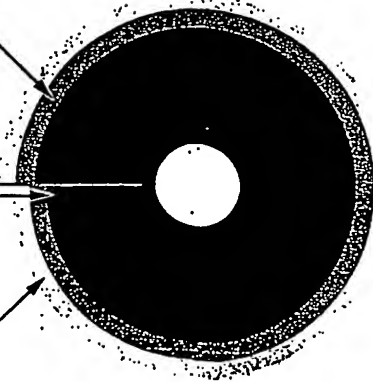
Seconds Disc A05, Hours Disc A01, Seconds Disc A06, Hours Disc A02.

12.30.45 AM

Seconds Disc A05, Hours Disc A01, Seconds Disc A06, Hours Disc A02.

12.45.15 AM

Seconds Disc A06, Hours Disc A01, Seconds Disc A05, Hours Disc A02.



A.

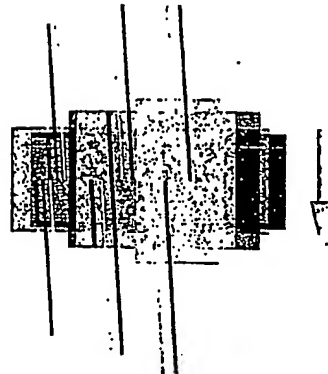
B.

C.

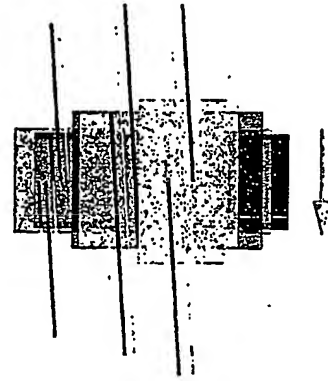
D.

SIDE VIEW

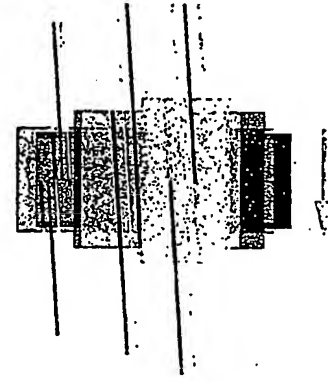
12.00.00 AM



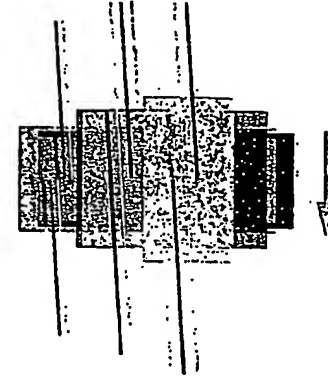
12.15.30 AM



12.30.45 AM



12.45.15 AM



A.

B.

C.

D.

FIG 9

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